

September 2009 Climate Summary for Southwest Lower Michigan

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Overview

September 2009 was generally quiet through the first two thirds of the month and ushered in fall-like weather as it ended. As can be seen in Table 1, temperatures across the area were above normal for the month, precipitation was below normal for the month (especially away from Lake Michigan) and no snow fell during the month.

The month started out on the cool side (Figures 1, 2 and 3 for Grand Rapids, Lansing and Muskegon respectively), as a cold front had just moved through the area and high pressure was building in. Temperatures warmed to above normal values through much of the rest of the month. The exceptions are brief cooling behind weak cold fronts mid month and a strong push of cold Canadian air behind a cold front on the 28th. This resulted in below average temperatures through the end of the month. As can be seen in Figure 4, average temperatures were above normal or near normal for much of Michigan.

A low pressure system moved to the south of the area on the 7th and brought some light rain through the 9th. A few weak, dry fronts passed through the region during the next week and a half with high pressure generally holding sway over the region. Precipitation totals across the area were mostly below a tenth of an inch through the 20th of September.

A shift in the storm pattern then began to emerge. A strong low pressure system from the front range of the Rockies moved to and over Michigan. Strong moist flow from the Gulf of Mexico preceded the system. A Canadian low then moved in, bringing a strong cold front and the only severe weather for the month. This mainly occurred in Montcalm County where trees and branches were brought down by straight line winds. Precipitation occurred most days from the 20th through the 29th with this shift in pattern. Daily precipitation for selected climate sites can be found in: Figures 5, 6 and 7 for Grand Rapids, Lansing and Muskegon respectively. Figure 8 shows how much the precipitation (inches) across the area was below normal for September.

Local notes of interest:

Grand Rapids experienced a strong wind gust to 47 mph on the 28th as a cold front moved through the area.

Lansing had a wind gust to 43 mph on the 28th as the cold front passed. The total precipitation for September was 0.69 inches in Lansing. Most of this fell with the system that brought the cold front through on the 28th. This was the 6th driest September on record for Lansing.

Muskegon also experienced a strong wind gust to 47 mph on the 28th.

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Table 1. Reported temperature, precipitation and snowfall amounts for September 2009 at selected climate stations in Southwest Lower Michigan. Normals are computed from 30-year averages from 1971-2000.

Location		Temperature (degrees F)	Precipitation (inches)	Snowfall (inches)
Grand Rapids	<i>Reported</i>	63.6	1.56	0.0
	<i>Normal</i>	61.3	4.28	0.0
	<i>Departure</i>	+2.3	-2.72	0.0
Lansing	<i>Reported</i>	62.2	0.69	0.0
	<i>Normal</i>	60.9	3.48	0.0
	<i>Departure</i>	+1.7	-2.79	0.0
Muskegon	<i>Reported</i>	63.4	2.72	0.0
	<i>Normal</i>	60.5	3.52	0.0
	<i>Departure</i>	+2.9	-0.80	0.0

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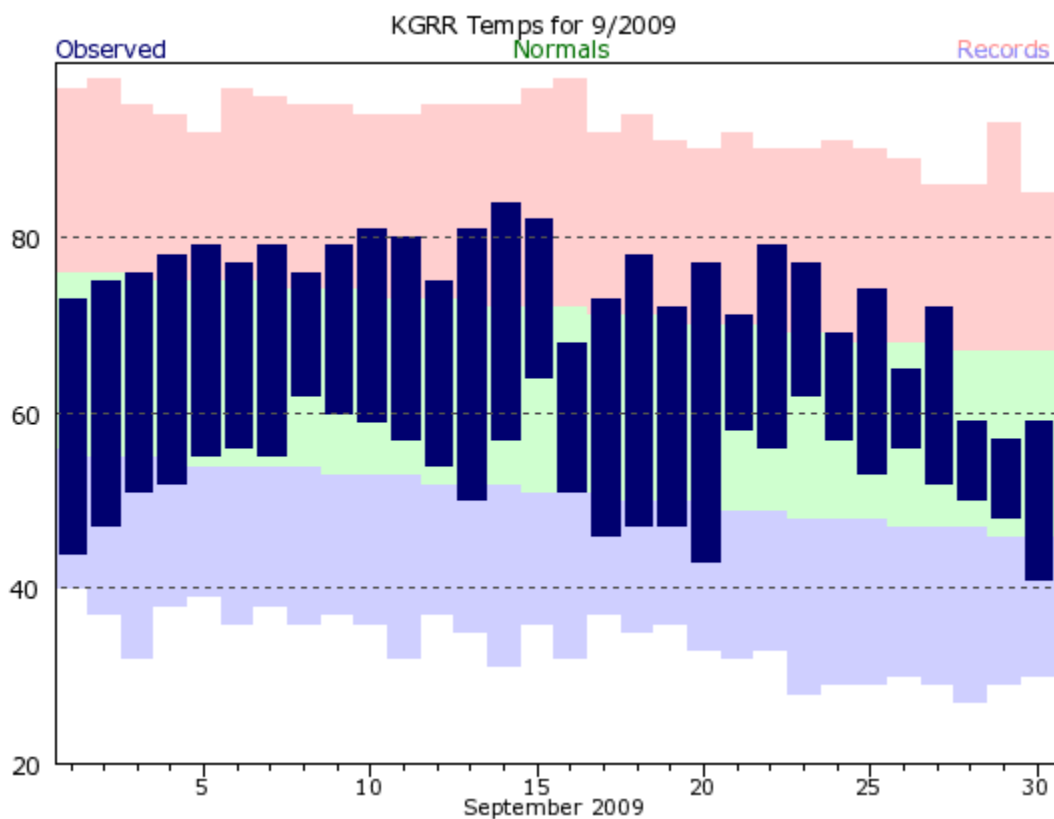


Figure 1. Observed temperatures at the Grand Rapids International Airport. Dark blue bars are the temperature range for each day. The green strip indicates the normal range of temperatures. Record high and low temperatures are indicated at the top of the pink area and the bottom of the blue area, respectively. Normals computed as in Table 1.

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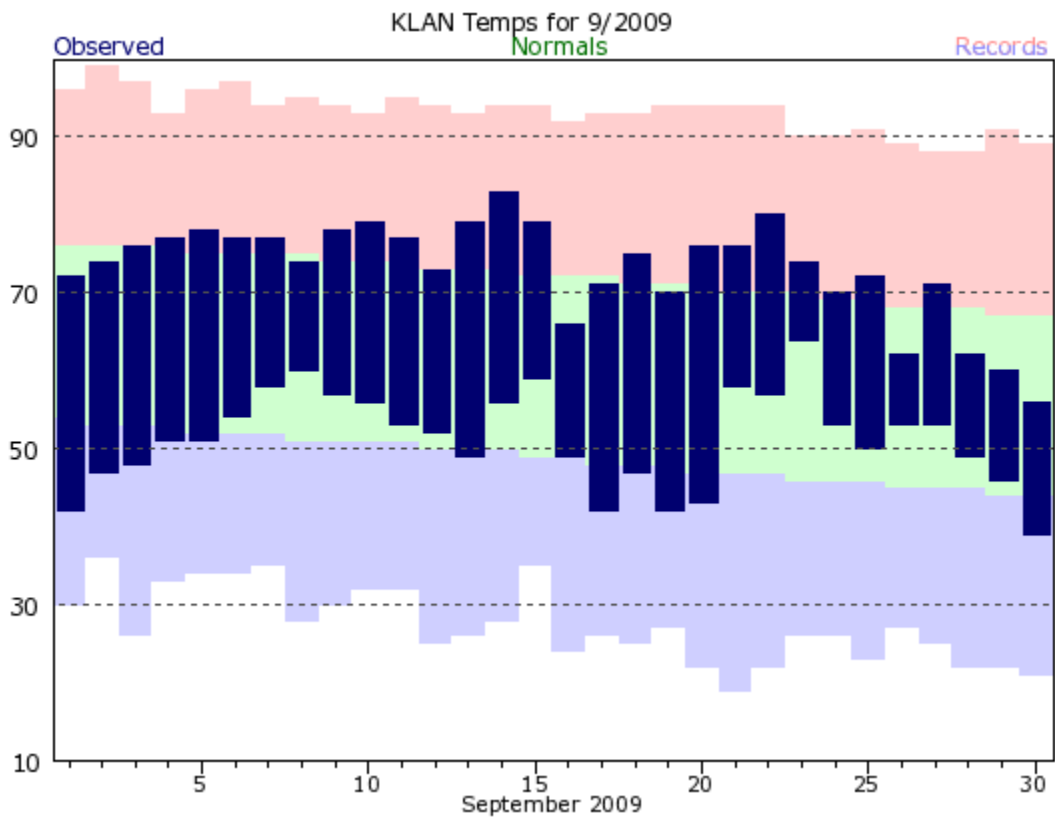


Figure 2. As in Fig. 1, except for the Lansing/Capital City airport.

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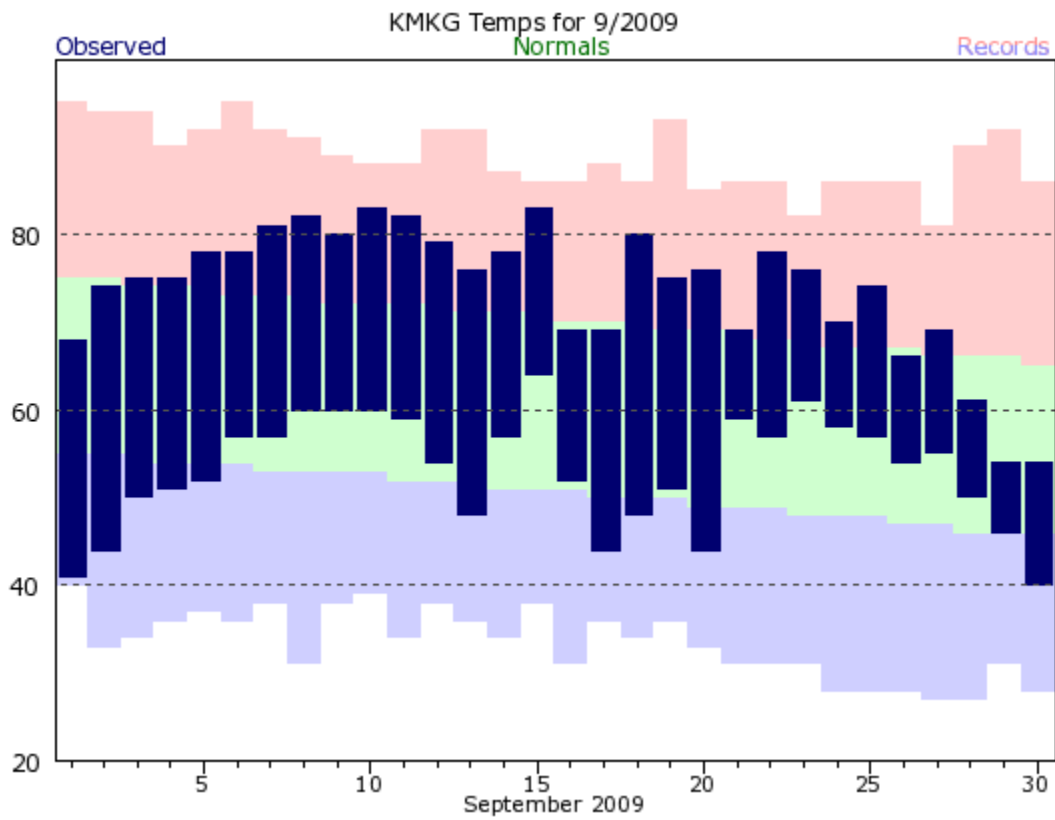
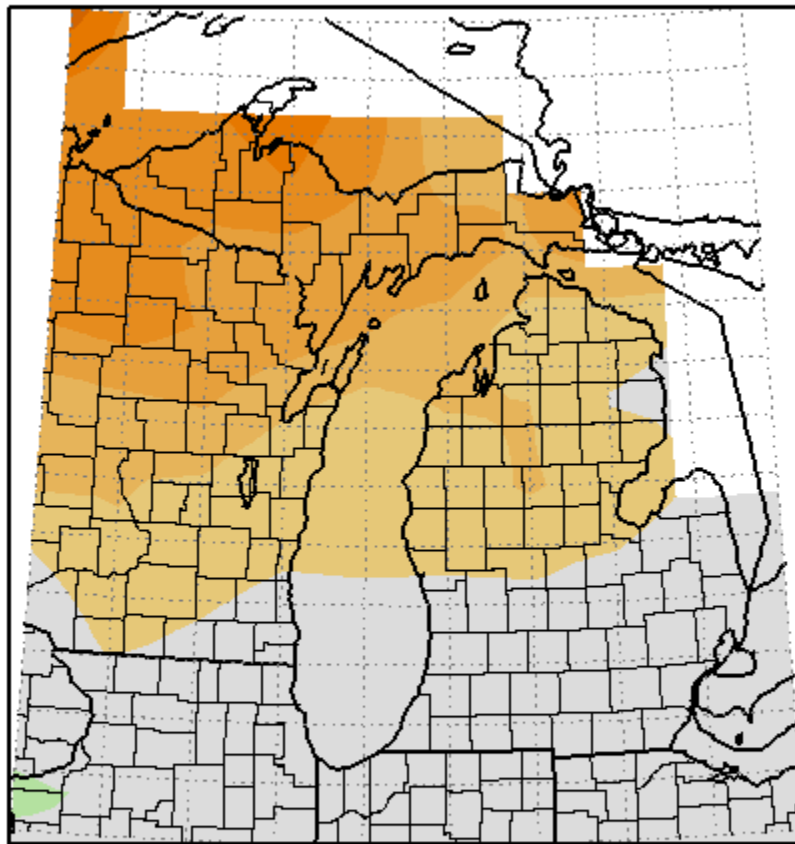


Figure 3. As in Fig.1, except for the Muskegon County airport.

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Average Temperature Departure from Mean in Degrees F
September 1, 2009 to September 30, 2009



NOAA Midwestern Regional Climate Center
Illinois State Water Survey
Champaign, Illinois

Figure 4. Average temperature departure (degrees F) for September 2009.

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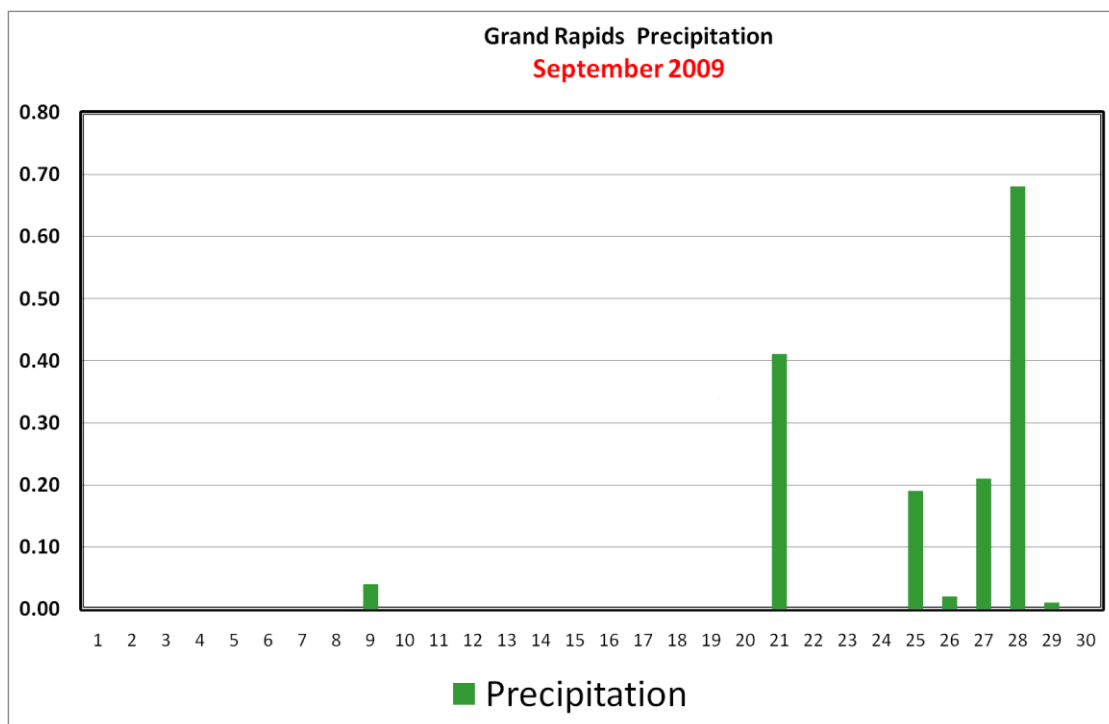


Figure 5. Daily precipitation in inches for September 2009 at the G.R. Ford International Airport.

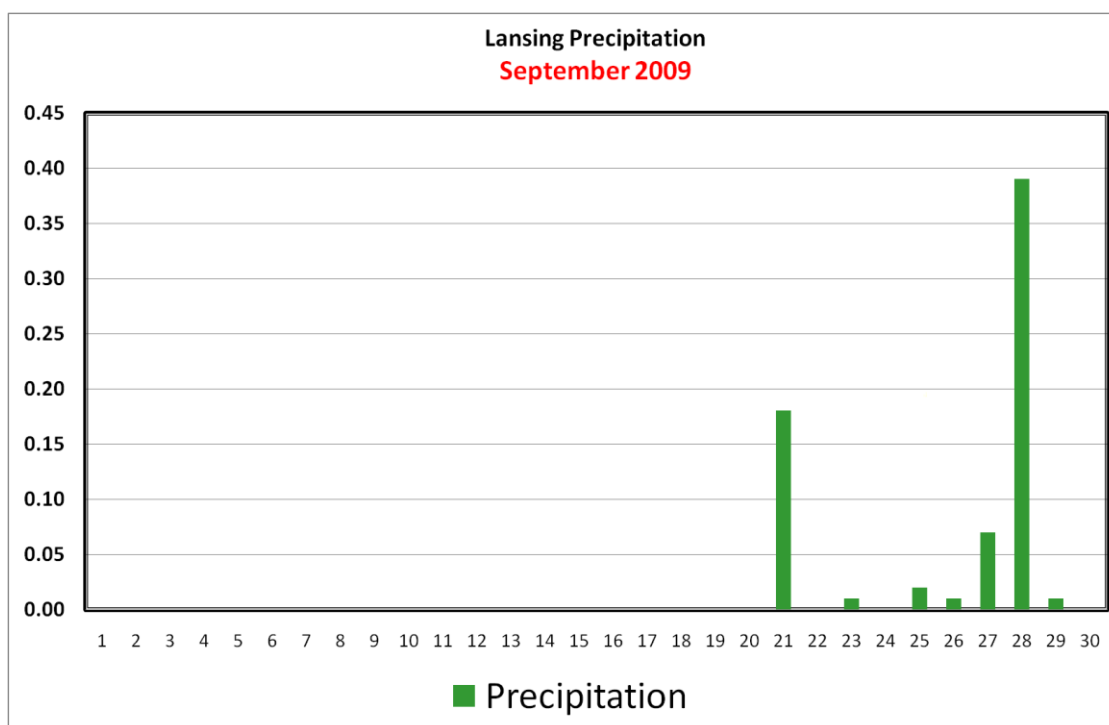


Figure 6. As in Fig. 5, except for the Lansing Capital City Airport.

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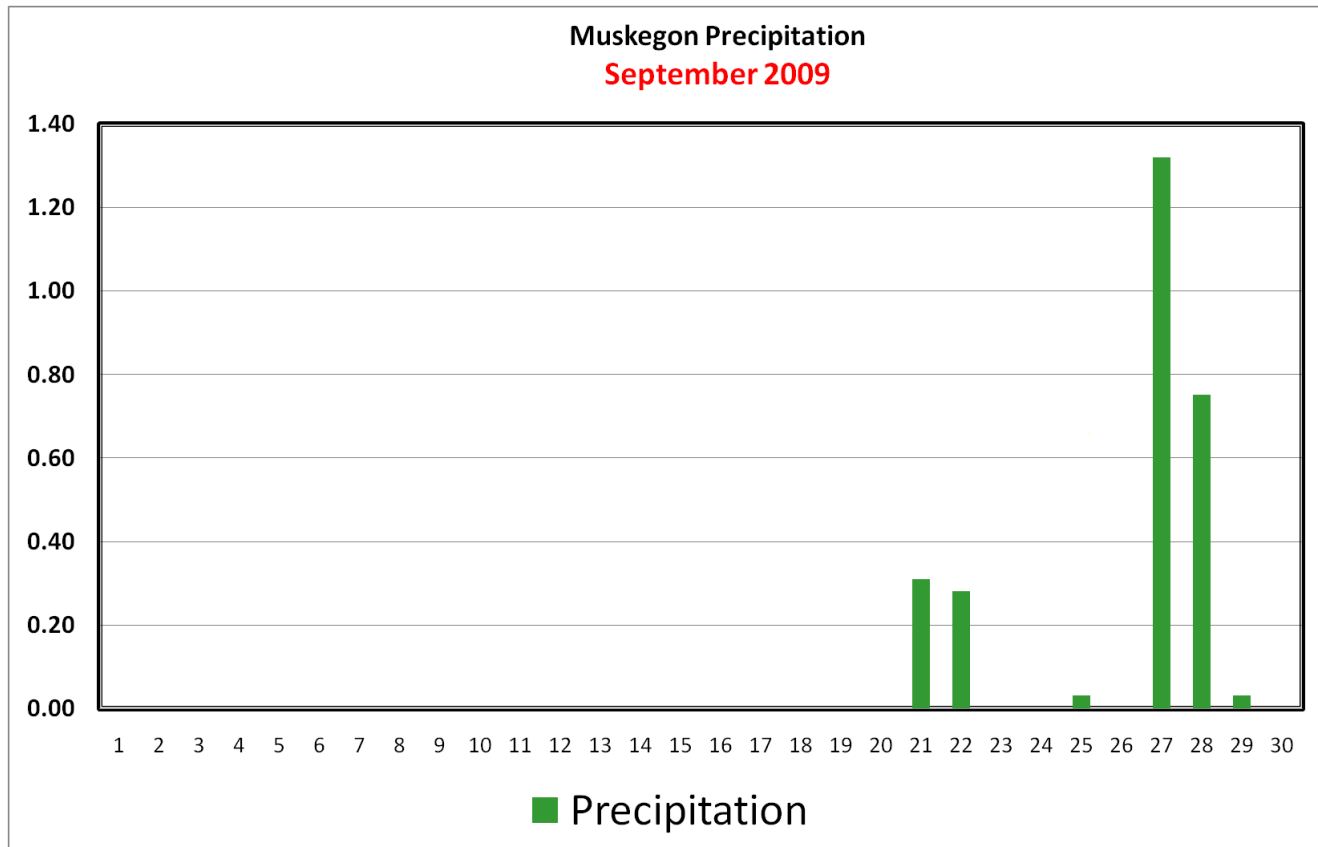


Figure 7. As in Fig. 5, except for the Muskegon County Airport

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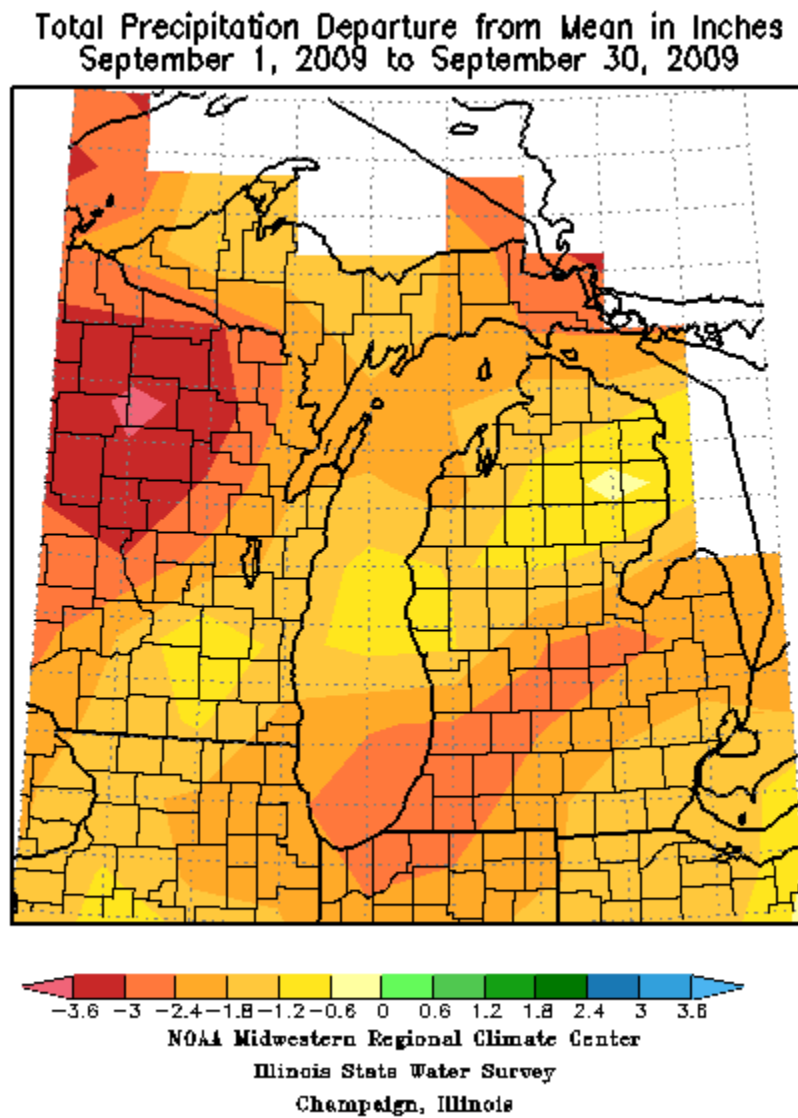


Figure 8. Total precipitation departure from the mean (inches) for September 2009.

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Highlights of the month

28th and 29th – The highlights of September 2009 came with a strong cold front that passed through the area on the 28th. With this front, the area experienced over half of the total rainfall for the month. Figures 9 and 10 show 24 hour precipitation totals ending at 8 am on the 28th and 29th respectively. The 28th was also the only day during September with severe weather. A Severe Thunderstorm Warning and Special Marine Warning were issued with this event, which produced some wind damage (Fig. 11). A Public Information Statement summarizing the gusty winds from this event was issued (Table 2).

Grand Rapids, MI (GRR): 9/28/2009 1-Day Observed Precipitation
Valid at 9/28/2009 1200 UTC– Created 9/30/09 10:33 UTC

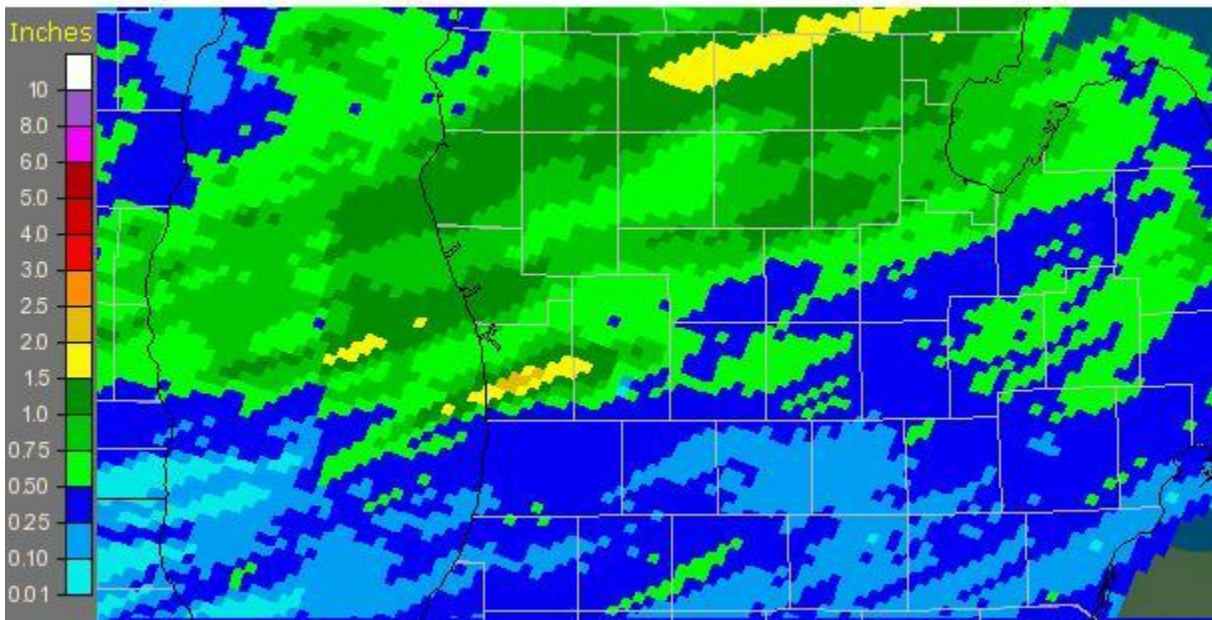


Figure 9. Total precipitation that fell from 8 am on the 27th to 8 am on the 28th of September 2009.

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Grand Rapids, MI (GRR): 9/29/2009 1-Day Observed Precipitation
Valid at 9/29/2009 1200 UTC- Created 10/1/09 10:33 UTC

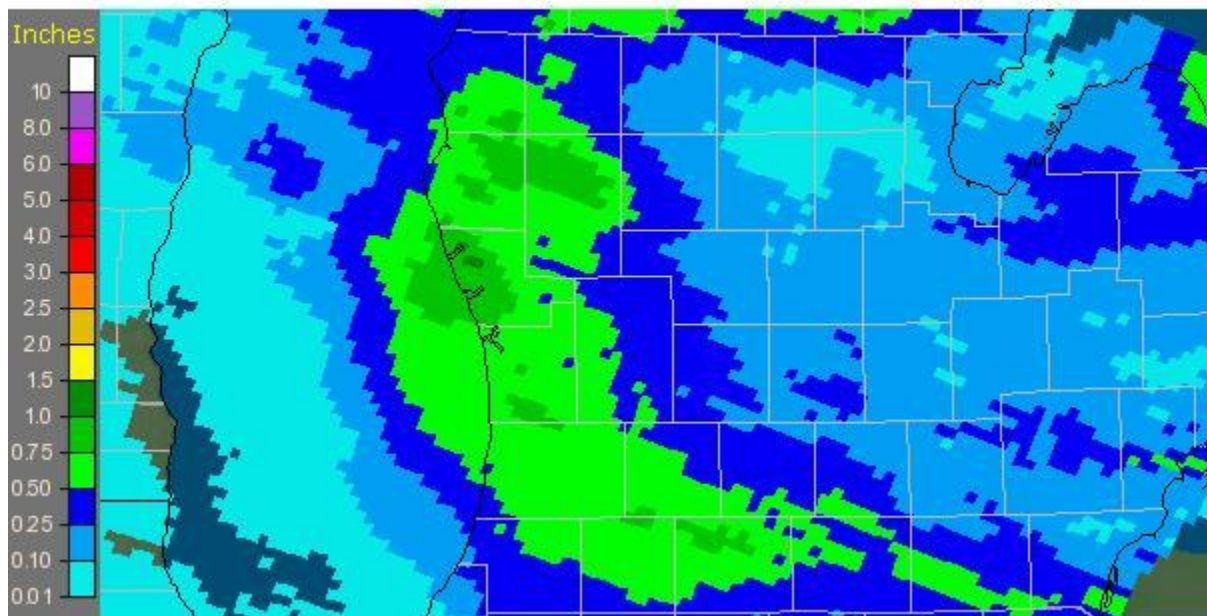


Figure 10. As in Figure 9, but from 8 am on the 28th to 8 am on the 29th of September 2009.

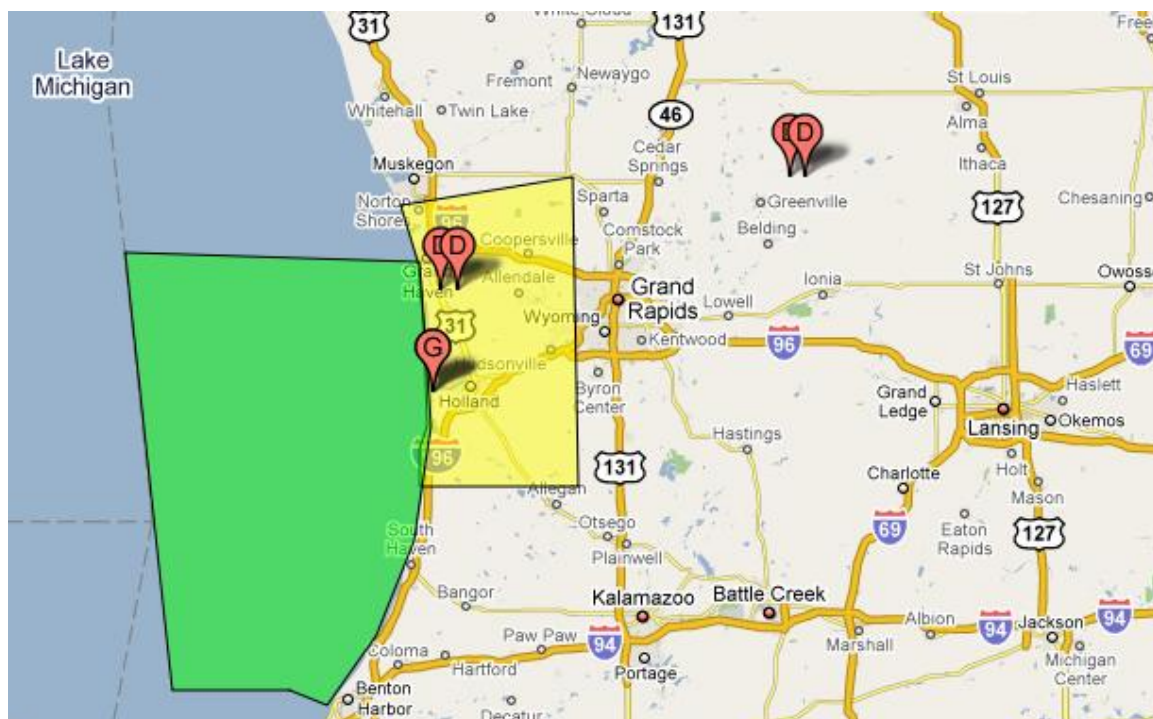


Figure 11. Severe Thunderstorm Warning and Marine Warning Polygons for the 28th of September 2009. The balloons indicate damage (D) or strong wind gust (G) observed.

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Table 2. The Public Information Statement issued by the National Weather Service office in Grand Rapids, Michigan to summarize the strong gusty winds with the system on the 28th and 29th of September 2009.

PEAK WIND GUSTS FROM THE FALL STORM SEPTEMBER 28-29 2009:		
SOUTH HAVEN GLERL SITE	60 MPH	300 PM - 400 PM
MUSKEGON GLERL SITE	55 MPH	200 PM - 300 PM
BIG SABLE POINT	53 MPH	350 PM AND 230 AM(9/29)
MUSKEGON AIRPORT	47 MPH	1155 AM
HOLLAND AIRPORT	45 MPH	131 PM
LUDINGTON HARBOR (NOS)	45 MPH	236 PM
ALMA AIRPORT	44 MPH	455 PM
LANSING AIRPORT	43 MPH	819 PM
GRAND RAPIDS AIRPORT	41 MPH	447 PM
BATTLE CREEK AIRPORT	41 MPH	1209 PM
SOUTH HAVEN AIRPORT	40 MPH	336 PM AND 636 PM
LUDINGTON AIRPORT	38 MPH	155 PM AND 717 PM
FREMONT AIRPORT	38 MPH	316 PM
MASON AIRPORT	37 MPH	1255 PM
KALAMAZOO AIRPORT	37 MPH	819 PM
JACKSON AIRPORT	33 MPH	652 PM
MARSHALL AIRPORT	33 MPH	1236 PM
BIG RAPIDS AIRPORT	33 MPH	416 PM
MOUNT PLEASANT AIRPORT	32 MPH	155 PM
CHARLOTTE AIRPORT	32 MPH	1235 PM
SOUTHERN LAKE MICHIGAN BUOY HAD PEAK WAVES OF 12.1 FEET WITH WINDS OF 47 MPH AT 450 PM.		
NEARSHORE BUOY OFF MUSKEGON HAD PEAK WAVES NEAR 14 FEET WITH WINDS OF 44 MPH MONDAY EVENING.		
ALL AIRPORT OBSERVATIONS ARE FROM AWOS OR ASOS SITES.		
ALL PEAK GUSTS OCCURRED ON MONDAY SEPTEMBER 28TH UNLESS OTHERWISE NOTED.		
BUOY WIND OBS ARE USUALLY A BIT UNDER ESTIMATED GIVEN THE BUOY IS PITCHING IN SIGNIFICANT WAVES.		
UNOFFICIAL OBSERVATION FROM A SPOTTER ON THE COAST AT HOLLAND AT 419 PM HAD A GUST OF 63 MPH VIA A HAND HELD ANEMOMETER.		